Citation:

Bond GE, Burr RL, McCurry SM, Rice MM, Borenstein AR, Larson EB. Alcohol and cognitive performance: a longitudinal study of older Japanese Americans. The Kame Project. The Kame Project. *Int Psychogeriatr.* 2005 Dec;17(4):653-68. Epub 2005 Sep 27.

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Study Design:

Prospective Cohort Study

Class:

B - Click here for explanation of classification scheme.

Research Design and Implementation Rating:

NEUTRAL: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To further investigate the longitudinal relationship between alcohol consumption and cognitive performance in the cohort of Japanese American older adults.

Inclusion Criteria:

- ≥ 65 years old
- ≥ 50% Japanese heritage
- Residing in King County, USA per US census

Follow-up sampling: 450 selected for additional clinical assessment based on:

- Age strata (five groups, 65 - 69, 70 - 74, 75 - 79, 80 - 84, 85+)
- Cognitive Abilities Screening Instrument (CASI) classes (score <81, 81 - 86.9, 87+)

Exclusion Criteria:

Lack of participation in follow-up exam (n=212).

Description of Study Protocol:

Recruitment

1990 King County Census Data.

Design: Prospective cohort study

Structured interviews conducted at baseline and follow-up every 2 years for 8 years.

Blinding used (if applicable): none reported

Intervention (if applicable): not applicable

Statistical Analysis

- Chi-squared and analysis of variance
- Growth curve analyses based on mixed-effects hierarchical linear models

Data Collection Summary:

Timing of Measurements

Baseline exam and four follow-up visits every 2 years for 8 years.

Dependent Variables

- Cognitive Function - Cognitive Abilities Screening Instrument (CASI) composite of the Folstein Mini-mental Hasegawa Dementia Screening Scale, total score ranging from 0 (lowest) to 100 (highest)

Independent Variables

- Alcohol -questionnaire asking about current and past alcohol patterns by beverage type (beer, wine, sake or liquor), frequency, quantity and number of consumption years
- One drink defined as 13 g alcohol

Control Variables

- Baseline age
- Education/income
- Migrant status
- BMI measured using calibrated scale and standard height measure
- Cigarette-smoking
- History of depression (measured by 11-item Center for Epidemiological Studies Depression Scale) measured every two years
- History of diagnosed stroke, hypertension, coronary heart disease, diabetes and stroke (time varying)

Description of Actual Data Sample:

Initial N: 1836 adults

Attrition (final N): 1624 (88%) participated in at least one follow-up exam; 212 dropped out after two visits due to loss to follow-up, refusal, or death

Age: 71.5 ± 5.5 years

Ethnicity: Japanese (13% born in Japan vs US)

Other relevant demographics: mean education 12.9 years

Anthropometrics: Increasing alcohol consumption was associated with younger age, higher education, income, and current smoking. Participants who were Nisei were more likely to consume alcohol over the 8-year follow-up period than those who were Issei or Kibei.

Location: King County, Washington, United States

Summary of Results:

Key Findings

- Current consumers (n = 480) scored significantly (P < 0.05) higher on CASI (mean rate of change of -1.22 CASI units) over the 8-year follow-up period than past consumers or abstainers (n = 1144, mean rate of change of -3.77 CASI units).

Variable	Estimate	SE	p-value
Linear component			
Intercept	-1.63	0.322	<0.001
Current/non-drinkers	1.367	0.570	<0.05
Nisei	1.703	0.321	<0.001
Age	-1.70	0.405	<0.001
Quadratic component			
Intercept	0.168	0.054	<0.01
Current/non-drinkers	-0.162	0.067	<0.05
Nisei	-0.218	0.048	<0.001
Age	-0.17	0.067	

Other Findings

- At baseline, abstainers began with lower cognitive function, as measured by lower CASI scores, than current alcohol consumers
- Current alcohol consumers experienced less cognitive decline compared to abstainers (-0.3 change for current consumers compared with -1.1 for abstainers)
- Suggestion that rate of cognitive decline slower among people that consume alcohol more infrequently compared to heavy drinkers (rates of cognitive decline over the 8-year period were -0.13, -0.42, and -0.91 for <=13, 13-26, and >26 grams of ethanol per day, respectively)
- There were no significant gender differences in the absolute scores on CASI, and the rate of change over time did not vary
- Participants who were Nisei had 2.4 higher CASI units compared to participants who were either Issei or Kibei

Author Conclusion:

In conclusion, this prospective study found that alcohol consumption was predictive of better cognition over time and that there were no significant gender effects observed in this association. Additional longitudinal studies investigating ethnic and gender differences are needed to explore the genetic and cultural factors that may influence the relationship between alcohol consumption

and cognitive performance. A major controversy to be resolved is whether moderate alcohol consumption can be linked to increased cognitive performance, quality of life and physical functioning.

Reviewer Comments:

As the authors noted, since the study enrolled individuals free of dementia at baseline, the sample is not representative of cognitive decline among older adults in general. Relatively short follow-up time of 8 years.

Research Design and Implementation Criteria Checklist: Primary Research

Relevance Questions		
1.	Would implementing the studied intervention or procedure (if found successful) result in improved outcomes for the patients/clients/population group? (Not Applicable for some epidemiological studies)	Yes
2.	Did the authors study an outcome (dependent variable) or topic that the patients/clients/population group would care about?	Yes
3.	Is the focus of the intervention or procedure (independent variable) or topic of study a common issue of concern to nutrition or dietetics practice?	Yes
4.	Is the intervention or procedure feasible? (NA for some epidemiological studies)	Yes

Validity Questions		
1.	**Was the research question clearly stated?**	Yes
1.1.	Was (were) the specific intervention(s) or procedure(s) [independent variable(s)] identified?	Yes
1.2.	Was (were) the outcome(s) [dependent variable(s)] clearly indicated?	Yes
1.3.	Were the target population and setting specified?	Yes
2.	**Was the selection of study subjects/patients free from bias?**	???
2.1.	Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study?	Yes
2.2.	Were criteria applied equally to all study groups?	Yes
2.3.	Were health, demographics, and other characteristics of subjects described?	Yes

2.4.	Were the subjects/patients a representative sample of the relevant population?	???
3.	**Were study groups comparable?**	Yes
3.1.	Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT)	Yes
3.2.	Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline?	Yes
3.3.	Were concurrent controls used? (Concurrent preferred over historical controls.)	Yes
3.4.	If cohort study or cross-sectional study, were groups comparable on important confounding factors and/or were preexisting differences accounted for by using appropriate adjustments in statistical analysis?	Yes
3.5.	If case control or cross-sectional study, were potential confounding factors comparable for cases and controls? (If case series or trial with subjects serving as own control, this criterion is not applicable. Criterion may not be applicable in some cross-sectional studies.)	N/A
3.6.	If diagnostic test, was there an independent blind comparison with an appropriate reference standard (e.g., "gold standard")?	N/A
4.	**Was method of handling withdrawals described?**	Yes
4.1.	Were follow-up methods described and the same for all groups?	Yes
4.2.	Was the number, characteristics of withdrawals (i.e., dropouts, lost to follow up, attrition rate) and/or response rate (cross-sectional studies) described for each group? (Follow up goal for a strong study is 80%.)	Yes
4.3.	Were all enrolled subjects/patients (in the original sample) accounted for?	Yes
4.4.	Were reasons for withdrawals similar across groups?	Yes
4.5.	If diagnostic test, was decision to perform reference test not dependent on results of test under study?	N/A
5.	**Was blinding used to prevent introduction of bias?**	Yes
5.1.	In intervention study, were subjects, clinicians/practitioners, and investigators blinded to treatment group, as appropriate?	N/A
5.2.	Were data collectors blinded for outcomes assessment? (If outcome is measured using an objective test, such as a lab value, this criterion is assumed to be met.)	N/A
5.3.	In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded?	Yes

5.4.	In case control study, was case definition explicit and case ascertainment not influenced by exposure status?	N/A
5.5.	In diagnostic study, were test results blinded to patient history and other test results?	N/A
6.	**Were intervention/therapeutic regimens/exposure factor or procedure and any comparison(s) described in detail? Were interveningfactors described?**	???
6.1.	In RCT or other intervention trial, were protocols described for all regimens studied?	N/A
6.2.	In observational study, were interventions, study settings, and clinicians/provider described?	Yes
6.3.	Was the intensity and duration of the intervention or exposure factor sufficient to produce a meaningful effect?	???
6.4.	Was the amount of exposure and, if relevant, subject/patient compliance measured?	N/A
6.5.	Were co-interventions (e.g., ancillary treatments, other therapies) described?	N/A
6.6.	Were extra or unplanned treatments described?	N/A
6.7.	Was the information for 6.4, 6.5, and 6.6 assessed the same way for all groups?	N/A
6.8.	In diagnostic study, were details of test administration and replication sufficient?	N/A
7.	**Were outcomes clearly defined and the measurements valid and reliable?**	Yes
7.1.	Were primary and secondary endpoints described and relevant to the question?	Yes
7.2.	Were nutrition measures appropriate to question and outcomes of concern?	Yes
7.3.	Was the period of follow-up long enough for important outcome(s) to occur?	Yes
7.4.	Were the observations and measurements based on standard, valid, and reliable data collection instruments/tests/procedures?	Yes
7.5.	Was the measurement of effect at an appropriate level of precision?	Yes
7.6.	Were other factors accounted for (measured) that could affect outcomes?	Yes
7.7.	Were the measurements conducted consistently across groups?	Yes
8.	**Was the statistical analysis appropriate for the study design and type of outcome indicators?**	Yes
8.1.	Were statistical analyses adequately described and the results reported appropriately?	Yes

	8.2.	Were correct statistical tests used and assumptions of test not violated?	Yes
	8.3.	Were statistics reported with levels of significance and/or confidence intervals?	Yes
	8.4.	Was "intent to treat" analysis of outcomes done (and as appropriate, was there an analysis of outcomes for those maximally exposed or a dose-response analysis)?	N/A
	8.5.	Were adequate adjustments made for effects of confounding factors that might have affected the outcomes (e.g., multivariate analyses)?	Yes
	8.6.	Was clinical significance as well as statistical significance reported?	Yes
	8.7.	If negative findings, was a power calculation reported to address type 2 error?	N/A
9.	**Are conclusions supported by results with biases and limitations taken into consideration?**		Yes
	9.1.	Is there a discussion of findings?	Yes
	9.2.	Are biases and study limitations identified and discussed?	Yes
10.	**Is bias due to study's funding or sponsorship unlikely?**		Yes
	10.1.	Were sources of funding and investigators' affiliations described?	Yes
	10.2.	Was the study free from apparent conflict of interest?	Yes